CHTCC®

CE

EN/IEC60947-5-1

# Operating Instructions for ZHRV2 Series Relay

## □ Function Features

- ○ Controls its own supply voltage(True RMS measurement).
- ○ Control status is indicated by a LED.
- ○ Loss of neutral.
- ○ Voltage measurement accuracy <=1%.
- ○ Measuring frequency :50/60Hz.
- ○ The relays are designed for clip-on mounting on ⊔ rail.

## □ Applications

- ○ Control for connection of moving equipment (site equipment,agricultural equipment, refrigerated trucks).
- ○ Control for protection of persons and equipment against the consequences of reverse running.
- ○ Protection against the risk of a driving load (phase failure).
- ○ Normal/emergency power supply switching.

## □ Model and Connotation

ZHRV2 —□/□

- Rated control supply voltage codes:
  A380,A400,A415,N220,N230,N240
  A380:380VAC, A440:400VAC, A415:415VAC (P-P)
  N220:220VAC, N230:230VAC, N240:240VAC (P-N)
- Function code 01...11(see Table 1)
- ZHRV2 series relay

Table 1

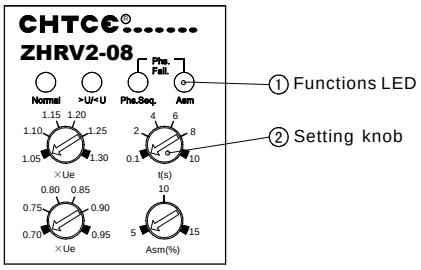
| Function code | Over-voltage | | Under-voltage | | Asymmetry | | Phase sequence | Phase failure |
|---|---|---|---|---|---|---|---|---|
| | Setting range | Time delay | Setting range | Time delay | Setting range | Time delay | | |
| 01 | — | — | — | — | — | — | ● | ● |
| 02 | — | — | — | — | 8% | 2s | ● | ● |
| 03 | 1.05...1.30 | 0.1s...10s | 0.70...0.95 | 0.1s...10s | — | — | — | ● |
| 04 | 1.05...1.30 | 0.1s...10s | 0.70...0.95 | 0.1s...10s | — | — | ● | ● |
| 05 | 1.15 | 2s | 0.85 | 2s | — | — | ● | ● |
| 06 | — | — | — | — | 5%...15% | 0.1s...10s | ● | ● |
| 07 | 1.05...1.30 | 0.1s...10s | 0.70...0.95 | 0.1s...10s | 5%...15% | 0.1s...10s | — | ● |
| 08 | 1.05...1.30 | 0.1s...10s | 0.70...0.95 | 0.1s...10s | 5%...15% | 0.1s...10s | ● | ● |
| 09 | 1.15 | 2s | 0.85 | 2s | 8% | 2s | — | ● |
| 10 | 1.15 | 2s | 0.85 | 2s | 8% | 2s | ● | ● |
| 11 | 1.05...1.30 | 2s | 0.70...0.95 | 2s | 8% | 2s | ● | ● |

Note:●this function is available,and —this function is not availble.

## □ Technical Parameters

| | |
|---|---|
| Rated supply voltage | 220V,230V,240V,380V,400V,415VAC +/-30% |
| Control ciruit frequency | 50/60Hz |
| Overvoltage range | 1.05...1.30Ue |
| Undervoltage range | 0.70...0.95Ue |
| Voltage hysteresis | P-P:6V,P-N:3.5V |
| Asymmetry range | 5%...15% |
| Asymmetry hysteresis | 25%Asymmetry setting value |
| Tripping time delay | Adjustable 0.1s…10s,10% |
| Measurement error | <=1%over the whole range with voltage variation |
| Konb setting accuracy | 1%of scale value |
| Rated insulation voltage | 415V |
| Phase failure sensitivity | 0.5Un |
| IP degree of protection | IP20 |
| Pollution degree | 3 |
| Electrical durability | 100000 cycles |
| Mechanical durability | 1000000 cycles |
| Height above sea level | <=2000m |
| Operation temperature | -20℃…70℃ |
| Relative humidity | <=50%(40℃) |
| Storage temperature | -25…75℃ |
| Conventional heat current | 5A |
| Utilisation category | AC-15 |
| Contact capacity | Ue/Ie:240V/1.5A,415V/0.95A |
| Output type | 1 C/O |
| Mounting support | 35mm symmetrical DIN rail conforming to EN/IEC 60715 |

## □ Panel Diagram




### Description of panel diagram:

I. Function LED:
- a. Normal: no fault of relay indicated.
- b. >U: overvoltage fault indication
- c. U<: undervoltage fault indication
- d. Phs.Seq: indication of input phase sequence errors
- e. PhsFail: indication of phase failure fault
- f. Asm: three-phase asymmetry fault indication
- g. >U/<U: in case of over-voltage fault, the LED would be constantly ON; in case of under-voltage, the fault LED would flash.
- h. >U/<U/Rst: when overvoltage fault occurs, the LED would flash at a high frequency flash (once every 0.3s); in case of undervoltage fault, the LED would flash at a low frequency (once every 1.5s); in case of recovery delay, the LED would be constantly ON.

II. Setting knob:
- a. ×Ue: knob for setting of threshold values of overvoltage (1.05…1.30) or under-voltage (0.70…0.95).
- b. t(s): operation time delay adjusting knob 0.1s…10s.
- c. Over_t(s): overvoltage operation time delay adjusting knob 0.1s…10s.
- d. Under_t(s): undervoltage operation time delay adjusting knob 0.1s…10s.
- e.Asm (%): knob for setting of threshold value of unbalance 5%…15%.

Over-voltage threshold value = set value × Ue

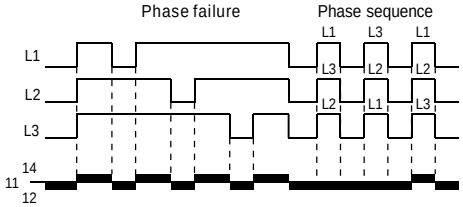
Under-voltage threshold value = set value × Ue

$$\text{Asymmetry value} = \frac{\text{Umax - Umin}}{\text{Ue}}$$

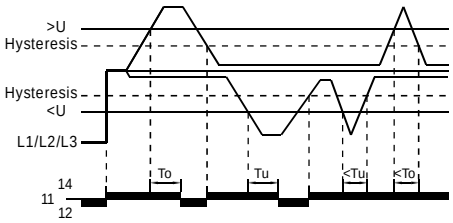
Umax: maximum phase voltage value; Umin: minimum phase voltage value.

## □ Function diagram

○ Phase failure and phase equence function diagram



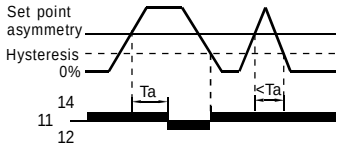

○ Overvoltage and undervoltage function diagram




To:Overvoltage threshold tripping delay.

Tu:Undervoltage threshold tripping delay.

○ Asymmetry function diagram

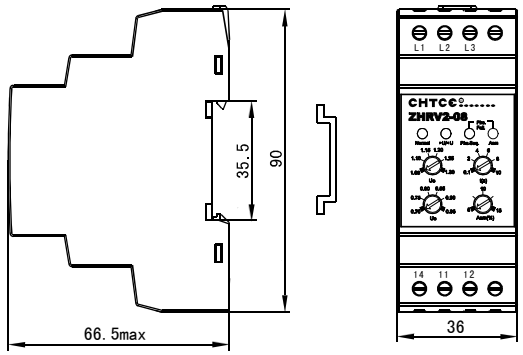



Ta:Asymmetry threshold tripping delay.

## □ Operating Instructions

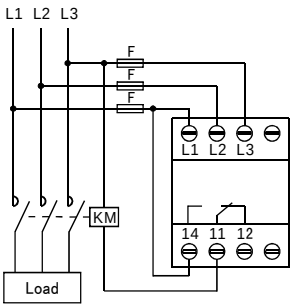
1.Operation threshold value and operation time delay is set through setting knob.
2.If relay detects faults during electrification, the output relay would maintain an "off-state".
3.In case of voltage fault, the relay would be disconnected after the set delay time elapses.
4.When measured voltage <= 0.5Ue, phase failure fault must have occurred.
5.When measured voltage value >= 1.5Ue, the relay would operate immediately.

## □ Overall Dimensions

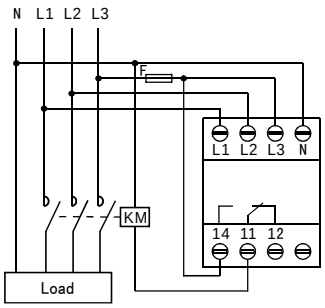



## □ Wiring Diagram

○ 3 phase 3 wire




○ 3 phase 4 wire




## ⚠ Warning

1. This product shall be installed, operated and maintained by professional personnel.
2. Whether or not the product functions normally, user shall not dismantle or repair the said product without permission, and we shall not assume any responsibility for the accident as a result thereof.
3. Please refer to the wiring diagram in Operation Instructions when arranging wires.
4. Never place power input line in the same conduit with other wires with heavy current. Please use shielded wire if necessary so as not to bring about interference that may influence the normal operation of relay.
5. Do not use this product in areas with dust, corrosive gases and with exposure to direct sunlight and rain.
6. Never use this product in medium with explosion hazard and with gases that may corrode metals and destroy the insulation, and do not use this product in a space with conductive dust.
7. Please store and use this product at rated supply voltage and stated temperature, height above sea level and humidity.
8. Failure to follow these instructions can result in death, serious injury, or equipment damage.
9. The warranty period of this product shall be 18 months under normal use.